

JPA 2001-253988 describes a colouring resin having plate-out resistant characteristics. Plate-out is a phenomena associated with extrusion moulding which results in the formation of scratches and defects in the appearance of a moulding. The colouring resin of JPA 2001-253988 contains a styrene-based resin, a pigment, a fatty acid and a metal soap. The fatty acid amide and metal soap are added as dispersing agents to disperse the pigment uniformly in the resin, a specified ratio of amide to metal soap being required to prevent plate-out and to ensure that the pigment is uniformly dispersed. The colouring resins of JPA 2001-253988 are for use in extrusion moulding and would be unsuitable as binders in synthetic asphalt.

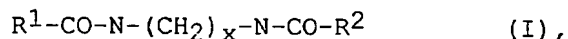
JPA 01-242667 relates to a road marking material that may be used in both hot and cold conditions. The marking materials of JPA 01-242667 contain a binder resin and a bisamide of specific melting point, the bisamide apparently being incorporated to improve the drying properties and contamination resistance of the material in hot conditions, and the cracking properties in cold conditions. JPA 01-242667 describes a road marking material: no mention is made of synthetic asphalt compositions or pigmentable binders for use therein.

Summary of the invention

It has now surprisingly been found possible to lower the workability temperature of a pigmentable binder without adversely affecting its rheological properties, by incorporating into the binder a small amount of a particular type of amide additive.

Accordingly, the present invention provides a pigmentable binder composition for use in synthetic asphalt, which composition comprises a resin, a lubricating oil and/or a lubricating oil extract, and in

the range of from 0.05 to less than 3 % wt based on total composition of an amide additive of general formula:



wherein R^1 and R^2 each independently represent alkyl groups having in the range of from 10 to 60 carbon atoms, and x is an integer in the range of from 1 to 4.

Detailed description of the invention

The pigmentable binder composition of the present invention preferably comprises in the range of from 1 to 70 % wt of a resin, more preferably 10 to 60 % wt, even more preferably 20 to 55 % wt, and most preferably 30 to 50 % wt, based on total composition.

A wide range of resins may be used in the pigmentable binder compositions of the present invention.

Resins that may be conveniently utilised include petroleum resins, e.g. petroleum resins prepared by polymerisation of unsaturated hydrocarbons present in unsaturated petroleum fractions, such as thermally cracked fractions and unsaturated hydrocarbons obtained from pyrolysis of hydrocarbons; and coumarone-indene resins e.g. resins prepared by polymerisation of unsaturated hydrocarbons present in coal tar distillates.

Coumarone-indene resins are, however, becoming less commercially attractive because they are of limited availability, are expensive, and have significant benzene content (and thus are of environmental concern).

Preferably, the pigmentable binder of the present invention comprises an acidic resin having an acid value in the range of from 0.5 to 200 mg KOH/g, more preferably 1 to 100 mg KOH/g, and most preferably 1 to 50 mg KOH/g.

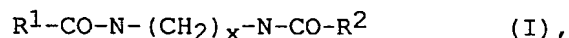
Preferred acidic resins according to the present invention are modified resins based on petroleum resins, said resins having been modified so as to comprise

Preferably, the lubricating oil and/or lubricating oil extract is a lubricating oil extract obtained by solvent extraction of a lubricating oil, most preferably by solvent extraction of a deasphalted oil (i.e. a lubricating oil obtained by the removal of asphaltenes from a residue of crude oil distillation). Lubricating oil extracts obtained by solvent extraction of a deasphalted oil are known in the art as Bright-Stock extracts, and may be obtained for example by solvent extraction of the deasphalted oil with phenol, N-methylpyrrolidone, liquid sulphur dioxide, either alone or in combination with an aromatic compound, such as benzene, or furfural.

Most preferably the lubricating oil and/or lubricating oil extract is a Bright-Stock furfural extract.

Of course, known resin-lubricating oil combinations may be utilised in the composition of the present invention. A very suitable product is sold by the Royal Dutch/Shell Group of companies under the trade name "Mexphalte C".

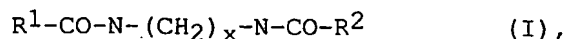
The pigmentable binder composition of the present invention preferably comprises in the range of 0.1 to less than 3 % wt of an amide additive of general formula



wherein R^1 and R^2 each independently represent alkyl groups having in the range of from 10 to 60 carbon atoms, and x is an integer in the range of from 1 to 4; more preferably in the range of from 0.1 to 2.5 % wt, even more preferably 0.1 to 2.0 % wt, and most preferably 0.1 to 1.5 % wt, based on total composition.

Preferably, R^1 and R^2 each independently represent alkyl groups having in the range of from 12 to 30 carbon

invention further provides a synthetic asphalt comprising a mixture of aggregate and a pigmentable binder composition which comprises a resin, a lubricating oil and/or a lubricating oil extract, and in the range of from
5 0.05 to less than 3 % wt based on total composition of an amide additive of general formula:



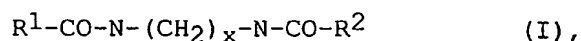
wherein R^1 and R^2 each independently represent alkyl groups having in the range of from 10 to 60 carbon atoms, and x is an integer in the range of from 1 to 4.
10 Preferred pigmentable binders described hereinabove with regard to the pigmentable binder of the invention are similarly preferred with regard to the synthetic asphalt of the invention.

The amount of pigmentable binder in the synthetic
15 asphalt of the present invention may vary depending on the application for which the synthetic asphalt is to be used. For example, synthetic mastic asphalt compositions will typically contain a larger amount of binder than a continuously graded asphalt. However, the synthetic
20 asphalt of the present invention preferably comprises in the range of from 1 to 15 % wt of pigmentable binder, based on total synthetic asphalt.

A wide range of aggregate type and size distribution may be present in the synthetic asphalt composition of
25 the invention. Suitable aggregates include stones, sand and fillers such as mineral dust and ground limestone. Conveniently the aggregate employed in the synthetic asphalt of the present invention may be a combination of filler (particles having a particle size of less than 63
30 micrometers) and larger aggregates such as sand (particle sizes of from 63 micrometers to 2 mm) and stones

C L A I M S

1. Pigmentable binder composition for use in synthetic asphalt, which composition comprises a resin, a lubricating oil and/or a lubricating oil extract, and in the range of from 0.05 to less than 3 % wt based on total composition of an amide additive of general formula:



wherein R^1 and R^2 each independently represent alkyl groups having in the range of from 10 to 60 carbon atoms, and x is an integer in the range of from 1 to 4.

2. Pigmentable binder composition as claimed in claim 1, which further comprises a polymer.

3. Pigmentable binder composition as claimed in claim 1 or claim 2, wherein the resin is an acidic resin, having an acid value in the range of from 0.5 to 200 mg KOH/g.

4. Pigmentable binder composition as claimed in any one of claims 1 to 3 wherein the resin is a modified petroleum resin comprising carboxylic acid, carboxylic acid anhydride or hydroxyl groups.

5. Pigmentable binder composition as claimed in claim 4, wherein the resin is a modified petroleum resin obtainable by treating a petroleum resin with maleic anhydride.

6. Pigmentable binder composition as claimed in any one of claims 1 to 5, wherein the lubricating oil and/or lubricating oil extract is a Bright-Stock extract.

7. Pigmentable binder composition as claimed in any one of claims 1 to 6, wherein the amide additive of general formula (I) is an ethylene bis-stearamide.

8. Pigmentable binder composition as claimed in any one of claims 1 to 7, which comprises in the range of from 1 to 70 % wt of a resin; 20 to 97 % wt of a lubricating oil

and/or a lubricating oil extract; 0.1 to less than 3 % wt of an amide additive of general formula (I); and optionally in the range of from 1 to 15 % wt of a polymer, all weights based on total composition.

9. Synthetic asphalt comprising a mixture of aggregate and a pigmentable binder as claimed in any one of claims 1 to 8.

10. Use of a pigmentable binder composition as claimed in any one of claims 1 to 8 in synthetic mastic asphalt.